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# SOME RECENT STUDIES ON VISUAL SENSATION RESULTING FROM ELECTRICAL STIMULATION

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In 1950 the author accidentally noticed that while applying an alternating electric current to electrodes attached to his head, he experienced a sensation of flickering light. Such sensations are called phosphenes. Theoretically there was nothing puzzling about this, in that the phenomena can be expected from Johannes Mueller's theory of specific nerve energy. This theory, advanced in 1826, states that irrespective of the type of physical stimulus applied to a sense organ, the quality of the ensuing sensation is the same; also, that the same type of physical stimulus will produce an entirely different sensation, depending upon the sensory system to which it is applied. Thus, it was to be expected that electrical stimulation of the eye would produce visual sensations.

Whereas standard reference and text books have in general neglected the effect on the sense organs of inappropriate stimuli, a more systematic search of the periodic literature reveals that 70 years before Mueller advanced his theory an investigator reported visual sensations produced by electrical stimulation. It also became apparent that during the last 200 years an impressive number of studies have been published on the subject. Except for the contributions of a few recent investigators, however, the literature is very unsystematic and the reported results are often contradictory.

After reviewing this literature, the author decided to conduct a systematic series of experiments in order to provide an overall view of the basic determinants of this phenomena, and to arrive at some theoretical orientation (1).

The technique for producing phosphenes is fairly simple. Two silver electrodes are attached to the subject's forehead. These electrodes are connected to the output terminals of a sine wave oscillator. Inserted in the circuit is a timer which permits the stimulating current to flow

for exactly one second. The oscillator is adjusted for frequency and intensity before the current is presented, and a microammeter allows one to read the amount of current which is flowing between the electrodes. Essentially two types of problems have been dealt with: 1. Determination of threshold, i. e., the least amount of current necessary to evoke a visual sensation, and 2. Perceived rate of the phosphenes as it is related to the frequency of the stimulating current, and as it is modified by simultaneous intermittent stimulation of other sensory modalities.

To determine a threshold a certain frequency is selected, the amplitude-control adjusted to give a value below threshold, the subject is given a ready signal and the timer switch thrown. In this manner the procedure is repeated with increasing intensity until the subject reports experiencing the phosphenes. The average of an increasing and a subsequent decreasing series is used as the threshold.

When the stimulus is applied the subject experiences a flickering sensation as if he were looking at a light which is turned on and off in rapid succession. At threshold intensity the flicker is seen in the periphery of the visual field and appears as a rhythmic wavering. With increasing intensity of the current, the flicker spreads across the field until the whole field is filled, and the rhythmic wavering is replaced by bright spots surrounded by darkness in a mosaiclike pattern. This whole pattern goes on and off in a flickering fashion. The visual impression is that of white light, without any sensation of color.

As mentioned above, the series of experiments was primarily designed to determine the basic variables which are related to the phosphene threshold. This includes such things as size of the electrodes, stimulus duration, electrode placement, comparison of AC and DC stimuli, and kind of different psychophysical methods used in the determination of the threshold. It furthermore includes determination of the threshold for frequencies ranging from 5 to 70 cycles per second; the relation between the threshold for the phosphenes as they first appear in central vision; the extent to which these phosphene thresholds are influenced by the state of light and dark adaptation of the subject; the threshold determined while the subject is looking at colored lights; and the phosphene threshold for specific frequencies during the process of dark adaptation. An effort was made to learn something about how the subjectively perceived flicker rate is related to the frequency of the stimulating current, by determining the subject's ability to distinguish phosphene rates as they resulted from specific stimulus frequencies.

In other experiments it was attempted to study the effect on phosphene rate of simultaneously presented intermittent light and of auditory clicks; phosphene rate was also compared with the rate of photic flicker when the frequency of the electric current and the intermittency of the flashing light was the same.

The ultimate objective of these experiments is to understand the mechanism by which the alternating current is transformed into visual sensations, and the mechanism of the interaction of electrical and other stimulation, such as is encountered in the light-adaptation experiments and in the modifying effect of other intermittent stimulation.

A pertinent problem is that of determining which structures are stimulated by the electric current. Is it the sensory receptors themselves or is it nerve cells? Some evidence from the experiments mentioned above indicates that the current acts on nerve cells. If this is true, the phosphene technique will enable us to single out photochemical processes, as they are demonstrated in regular visual experiments, from processes in nervous tissue. Specifically which type of nerve cells in the visual pathways are involved is still a remote question, even though some evidence points to the bipolar cells in the retina as the site of action. At the present time, however, this is hardly more than a "best guess."

Another problem in this area has received particular attention. When thresholds are plotted against frequency of the stimulating current, the resulting curve is shaped like a U, and has a minimum value of about 20 cps. The same type of curve was found by the British physiologist, A. V. Hill, when he applied sine wave stimulation to motor nerves of various species of animals. The lowest contraction threshold found by Hill, however, was between 100 and 200 cps. Hill stated that this minimum was a result of the interaction of nerve accommodation and excitation, where the changed nerve accommodation is a result of variation in the build-up phase of sine waves of various frequencies, and the excitation differences were attributed to the decrease in pulse duration with increasing frequency of the current. The discrepancy in the optimum frequency of the phosphene and motor nerve threshold has discouraged previous investigators from applying Hill's principles to phosphene thresholds. The present author believes that Hill's principles do apply to the phosphenes, but that nerve cells with properties different from those of the motor nerves are involved.

Assuming that accommodation and excitation are legitimate explanatory principles, one would expect to obtain a different type of threshold curve when rectangular electrical pulses of constant duration are used. With these stimulus characteristics, accommodation and excitation as they actwith the sine wave current, would not be involved; one would expect a curve which did not have the high thresholds at the lowest and highest frequencies. Recently, this experiment has been carried out (2). The results produced a greatly flattened threshold curve which indicates that the accommodation and excitation processes are largely responsible for the elevated threshold at the low and high frequency extremes when sine wave stimulation is used; however, 20 cps still comes out with a threshold which is lower than those for frequencies below or immediately above 20 cps. This indicates that the stimulated nerves are particularly sensitive to a certain repetition rate of the current.

Our program of research in this area continues.[1] Efforts are being directed toward further understanding the mechanisms of the electrically induced sensations described above. This program includes the comparison of the perceived rates of the phosphenes as they result from sine waves and from rectangular pulse stimulation; a study of the occurence of beats (periodic summation and dampening) when intermittent electrical and photic stimulation are presented simultaneously; the study of differential light adaptation of the two eyes and the phosphene threshold; and phosphene threshold with and without simultaneous stimulation of other sensory modalities. In addition, we propose to investigate sex differences and maturational changes of the electrical excitability of the visual apparatus.

The practical applications of these studies may not be immediately apparent. The present status of our knowledge does not permit us to make a complete listing of such applications, but the following appear to be realistic possibilities. The phosphene threshold reflects excitability of certain portions of the central nervous system. Such excitability may be correlated with a variety of psychological measures. It is possible that persons who have sustained central nervous system damage may distinguish themselves from others with constitutional deficiency and from the normals. Similarly, brain damaged and familial mental defec-

1. This program is being supported by National Science Foundation Research Grant No. G-2106.

tives may show comparable differences. Furthermore, it is possible that the phosphene threshold will enable us to better understand the action of drugs on a segment of the central nervous system. Also it might be possible for the ophthalmologists to utilize the technique as a diagnostic aid.

REFERENCES

1. Clausen, Johs. *Visual sensations (phosphenes) produced by AC sine wave stimulation.* Copenhagen: Munksgaard, 1955.

2. ---------- *Repetition rate and pulse duration of rectangular pulses as determinants of visual thresholds for electrical stimulation.* (In preparation).

## DATES TO REMEMBER

May 5—Parents' Inc. Dinner-Dance at Hotel Pierre in New York.

May 19—FM Club Meeting at The Training School.

May 23—"Vineland Day," New Jersey Federation of Women's Clubs, at The Training School.

June 5—Rotary Dinner at The Training School.

June 13—"Annual Day," Association of The Training School holds annual meeting.

July 13—Menantico Farms 43rd Anniversary Program.

# SO — JOHNNY CAN'T READ*

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Dr. Rudolph Flesch's book "Why Johnny Can't Read" stirred many parents and educators into a frenzy. Schools over the nation used every means known to convey to the parents their concepts of the teaching of reading. While those in the field of educating the retarded took little part, we were forced to take note because parents of our children, too, are concerned about the academic learning of Johnny. Our task is much greater than simply attempting to teach a child to read. At least this is the consensus of those charged with the education of Johnny. Nevertheless, some parents feel the school has failed if he cannot read.

With a new child at The Training School, the staff attempts to have the parent better understand their child. In doing so, parental aspirations often need to be pared down to the capacities of the individual boy or girl. This is one of the purposes of our three-month observation and diagnostic period. After the three-month stay and trial program we are able to discuss intelligently: (1) WHERE the child is at the present time; (2) HOW FAR he is expected to go in the future, and (3) WHAT COURSE is to be taken to get him to the ultimate goal.

Finding the child's present status is the task of each department. Tests, round-the-clock observation, trials at varied activities — work and social — medical studies, and close personal contacts help to establish mental and social age, verbal output against his performance level, educational achievement level, emotional maturity, physical strains and drains, and many other strengths and weaknesses. In other words, a complete inventory is made of the child's total personality to determine WHERE HE IS. The present status helps in forecasting the future and to formulate a learning program to meet his needs, present and future.

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* With apologies to Dr. Rudolf Flesch, "Why Johnny Can't Read." New York: Harper & Brothers, 1955.

At the beginning parents assure us that they are in accord with the planning and appreciate the scientific approach. They seem to accept its findings and intend to look realistically at the needs of the child so that he will be happy and more efficient. As time passes, many realize that they have been told that "Johnny Can't Read" and probably never will. This is most disturbing and distressing — in fact some parents look on it as a real catastrophe.

Modern society has emphasized the academic skills so strongly that many have come to believe it to be the true essence to a successful life. We have become "worshippers at the throne of academics." Life is dependent upon the written page. Yet, when one surveys the average person's daily life, it makes up such a minute part. Ask the librarian how much use is made of the neighborhood library by the average person — far more time is spent on the telephone, listening to the radio, or watching television. How many letters a year does the average housewife or workman write? This does not necessarily mean we are calling for illiteracy, but simply that the world does not stop because one cannot read or write.

To read with understanding the simplest of practical material, a person must have reached a minimum of a mental age of nine years. In many cases even this mental age score is not a correct indication of learning abilities. Because brain damage is involved in a large percentage of the retarded, the individual variations may show no relation between specific abilities and the I. Q. or mental age which is only a statistical average for the person. In America's graded schools, in the primary classes (first to third), the child is "learning to read." Thereafter he "reads to learn." His primary teacher merely arms him with certain tools to do the work of reading.

Many children brought to The Training School even at maturity will never exceed the nine-year mental level, nor will some ever develop specific abilities necessary to learn to read. Therefore, if all the energy of the staff and the pupil were to be directed toward teaching the child to read — were he not predicted to reach the nine-year level — he would only own the tools. It might sound like "the cat sat on the mat," or other familiar primary reading exercises. The accomplishment of this by the child leaves a false impression with the parent believing that he is going to become a reader. A man with a set of tools is not necessarily a carpenter or mechanic. The true test is the use he can make of them.

The skill of reading requires many concepts that need maturation. Our children unfortunately have many perceptual disturbances which hinder achievement, particularly when one realizes that reading is a system of man-made symbols often difficult for the average child.

Over the years our staff has seen many children who have been taught "tricks in learning" by tutors which seem to satisfy parents. Most of these efforts simply end with the child being able to identify a limited category of words but with no meaning or content involved. It was reported that some years ago a child was brought in for an interview who was so overtrained in a phonetic attack on words that she could call off any word or group of syllables placed before her. Upon further investigation it was discovered that the child could not dress, feed, wash, or care for her toilet needs. What price "reading"?

If the prognosis for Johnny indicates that he will reach a sufficient level to make use of his reading, every method known should be utilized in an all-out effort. If he is not able to reach that height, then certain *meaningful* words or phrases can be taught to him that will serve his needs. However, he will not be reading but *recognizing*. The words will simply be picture associations linked with some idea or thing which he understands. Just as he knows the difference between his parents, aunts, cousins at sight and can call them by their proper titles, he can recognize Bell Telephone (blue and white sign), Coca Cola, etc., at a very early stage in life. Later he can learn to know such sight words as "Stop," "Go," "Danger," "Men," "Women," etc. This, in essence, is functional reading for Johnny, something he can associate and understand.

Let us go back to our original premise "So — Johnny Can't Read." A real program for the retardate is more concerned with functional factors rather than with symbols or vicarious activities.

First and primary should be the accomplishment of self-help. This is best learned in a loving situation and not in the organized classroom.

More often than not, after self-help has been established, the child is more ready to proceed with further learning. The practical arts of living — living with people and situations — should be stressed throughout the life of the child, be he normal or different. Social development and the development of imagination in the young is best achieved through play with a group under good guidance. A happy situation aimed at following directions, stimulating speech, motor co-

ordination, listening, and many more social and practical experiences are necessary long before one worries about the academic side of life. Were we able to add, with proficiency, just the few concepts mentioned above, a livable, lovable child and adult would emerge. It is better that we have a well adjusted person in any event than one who simply reads and writes.

"So — Johnny Can't Read." If the normal Johnny has difficulty in truly accomplishing this skill, his brother who is different is faced with even a greater task to plague him. Remembering the meager use of reading which many average adults make, perhaps we are justified in not being too alarmed at Dr. Flesch's charge, "Johnny Can't Read."

Taking care of finned pets
is one of favorite hobbies.

# A UNIT METHOD OF TEACHING READING TO MENTALLY RETARDED CHILDREN

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This is a method of teaching reading based on the premise that children learn more readily and remember better that which satisfies a felt need and is learned from experience. Text books are not used as such. The unit is the vehicle used to meet the needs of the children at various levels of interest and achievement. Its objective is both coordinative and instructive. It has been developed through some trial and error and is still in the process of development.

The unit of study consists of any experience or topic in which the interest of the children can be actively aroused. Examples of units which have been successful and which the children have enjoyed are Mr. Postman, Mr. Policeman, The Farm, The Store, Magnets, and Weather.

The unit is developed along several lines which are coordinated. Pictures are collected. Information is collected. Scrap books are made. The children go on excursions. Stories are read. Games and songs are learned. Skits and dramatizations are worked up, and a chart is constructed.

The chart is the focal point of the unit. It presents pictures and information. It presents some new words and many known words. It presents the concrete base of what is to be mastered. The pictures are selected and organized on the chart. Under each picture sentences or captions are written. The components of these are words the children are ready to learn and words which are peculiar to the topic. A unit on weather, for example, might contain words such as temperature, freezing point, thermometer, and climate. A set of word cards is made. This usually includes one card for each word in the set and a duplicate of any word that should be stressed. Occasionally, words which are too difficult are not included in the word cards.

The procedure in using the chart is as follows: The children familiarize themselves with the pictures and discuss them. Under each, as mentioned above, some item of information is written. They familiarize themselves with the writing under the pictures. They go over the chart once or twice a day for several days until the sentences come readily to mind. Then they are ready for the word cards. (In the beginning the cards are held up, each under the picture where the word is found. This aids in quick identification and recognition of the word. After several days the children begin to know the words with little or no reference to the sentences and pictures. The children often amuse themselves matching words with the chart. They enjoy doing this much in the same way as they enjoy a jigsaw puzzle. They also like to hear one another through the chart and word cards. Usually it is not long before they have learned to recognize all the words without any reference to the chart.

At the same time that this chart work is going on, our blackboard is used daily for short stories or lessons. These are developed from any picture on the chart. They are expressed well within the reading vocabulary of the children. They read it and they write it. Sometimes two boards are used. Questions are put on one board. Answers, not in the same order, are put on the other. The children take turns reading a question and finding the right answer.

The chart work and blackboard reading are supplemented in several ways. First, there is available an opaque projector which has varied application. Second, there is an assortment of Primers and First Readers which the children enjoy reading. Third, there is a library table to which all contribute their picture story books. Fourth, they learn to unlock words and to recognize initial sounds, endings, and the like. Fifth, there is the story period. They learn short poems. They enjoy "Show and Tell." They talk about pictures and sometimes they play out stories. Lastly, they play games such as word bingo which helps with words that give special difficulty.

The opaque projector helps to develop skill in observation and discrimination. Using India ink, charts are made of many kinds. For example:

1. Pick out the one that is different;
   e. g., house, horse, house, house, house.
2. Pick out the one that is the same;
   e. g., goose, geese, grose, gooce, goosn, goose.
3. Tell whether these are the same or different (using letter formations or geometrical forms);
   e. g., coon - coop
   mstk - mskt.
4. Read a group of numbers, turn around, and repeat them.
5. Look at a group of pictured objects, turn around, name them.
6. Simple stories are read about the unit, about the children. about anything that interests the children.
7. They learn sounds and endings.

The library corner consists mainly of Little Golden Books which have a high interest level for the children. These are such books as Bambi, Pinochio, Our World, Johnnie's Machines, Five Pennies to Spend. Some of these the children can read, others they picture-read, that is they tell the story to themselves guided by the pictures as they leaf through the book.

Two other activities are important supplements to reading. The first is the news which is written on the blackboard each morning. This consists of whatever is important that happens to the children themselves. Usually we include President Eisenhower and the weather. The day, the date, and the temperature are always written on the board. Clocks are drawn and the time is written below. The second supplement consists of letters home and to friends. Whenever a letter is written the child expresses himself in his own words. A copy is made. From this he makes his own copy. Both of these activities are personal and interest value is high.

The children receiving this instruction are a class of twelve retarded youngsters. They range in age from ten to twelve. Their intelligence quotients range from 55 to 70. Some of these children are familial cases and some are brain-damaged. Seven of these children have had this instruction for at least two years. Graded for reading on the Cali-

fornia Achievement Test in January 1955 and again in January 1956, they scored as follows:

| Age | I.Q. | Child | Reading Grade Jan. '55 | Jan. '56 | Difference |
|---|---|---|---|---|---|
| 12.1 | 64 | A | 2.5 | 3.0 | +0.5 |
| 11.5 | 57 | B* | 1.4 | 3.6 | +2.2 |
| 11.1 | 67 | C | 1.9 | 3.0 | +1.1 |
| 12.6 | 53 | D | 1.6 | 2.9 | +1.3 |
| 12.5 | 58 | E | 2.0 | 3.0 | +1.0 |
| 12.6 | 58 | F | 1.8 | 3.0 | +1.2 |
| 10.3 | 64 | G | 1.8 | 2.6 | +0.8 |
| | | | | Average improvement | 1.15 |

In summation, the use of a unit of work with charts, pictures, and activities helps reading to be meaningful to these retarded children. It also provides them with a great deal of repetitive drill which is not unpleasant. It puts great stress on the connective and in-between words. And, lastly, it insures the child a well-developed vocabulary of sight words. This gives the child a firm foundation for the later development of word recognition skills and an understanding of phonics.

* B had not been well at time of test in January 1955 and 1.4 was probably not a true score.

# TEACHING READING READINESS AND BEGINNING READING TO RETARDED CHILDREN

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The teaching of reading readiness and later beginning reading in a school for retarded children presents problems which are seldom found in any other type of school.

In the class referred to in this paper there are twelve children ranging in age from nine and one-half to twelve years, with mental ages of five and six years. Some of these children come from homes which are above average in income and social level; some come from homes from the opposite end of the social scale, and others have never known a home of any kind. A reading readiness program, which for these children must be a prolonged program, was carried through most of last year. These children are approached with a reading readiness program covering three areas:

1. Visual discrimination
2. Auditory discrimination
3. Coordination

## VISUAL DISCRIMINATION

Aids are used, such as large picture posters, flash cards with words and numbers, and an opaque projector. Visual discrimination is essential for later work in phonics and word analysis. Beginning this work at the achievement level is a must. The beginner who is getting ready to read needs to learn the visual details of size and shape. Kindergarten children can learn to distinguish differences in objects and pictures.

Short words are used — three alike and one different — and later geometric figures. The children are taught to look at a word from left to right. With these methods the child is trained to distinguish between big and little, few and many, top and bottom, etc., and, at the same time, to pick up a few words and get a concept of numbers to five.

## AUDITORY DISCRIMINATION

Auditory training is begun by teaching the children to carry out simple instructions given in a cheerful tone of voice. They imitate the sounds of animals, birds, and machines. They listen to the sounds of nature — falling rain drops, falling leaves, and the wind. This training is interesting to the children. A short poem is taught in each of these areas. This class takes readily to verse. Little children love the rhyme and rhythm of nursery jingles. They say them over and over for the sheer joy of the sound. Selected story poems are read to the children.

Humor is another source of delight. By laughing with the children over the humor and nonsense in verse they are more likely to learn to love poetry as they often love music. The children enjoy a story hour. Most of the children become good listeners. Some of the stories are acted out. Children are born actors, and they get much pleasure from this source. Here the individual traits of the child are developed much to the joy of the child — many times to the delight of the teacher.

The children learn the various qualities of sound, such as loud, soft, high, low, shorter, and longer. After working with sounds in this manner, the children are ready to identify words which begin alike; for example pig, pen and pencil, robin and rabbit, moon, mother, and milk. Here pictures are used by having the children mark the object beginning with the same sound. Later the same procedure can be used with ending sounds and words that rhyme.

## COORDINATION

This area involves the finer coordination between the hands and the eyes, and also the movements involving the entire body. It should start with very large lightweight blocks, large enough for the children to build a house — a house large enough for the children to get inside. Later they build with smaller blocks, logs, and tinkertoys. Then they are given large beads and clay.

The children are taught to walk and march to music. The action games with music help to develop the larger muscles of the body and are a source of great delight to the children. Different materials and methods must be tried. The skill of the teacher, the size of the class, the treatment of special difficulties such as visual defects and hearing losses — all are important.

Materials and methods are adopted to suit the needs of low mental ability. Speech defects and physical health factors leave their mark on a child's ability to learn to read.

Many children have not known happy pre-school years, and their environment has been such that their vocabulary is very limited. With these children a vocabulary must be built without too much stress on the child's particular difficulty, or the child will be confused when it is time for the beginning of reading. Visual and auditory perception and good coordination are fundamental factors in later reading and word recognition.

## BEGINNING READING

In beginning reading the unit method is used. The children are given a sight vocabulary usually starting with "The Family." A picture chart is made and displayed on the bulletin board. The chart should be at the child's eye level with words beside the pictures. In the beginning the words should be printed on the pictures. This eliminates, for the beginner, the transition of the eye from the picture to the word.

Each unit contains from 25 to 30 words. Word flash cards are used in connection with the poster. Each day the children compose a story about our poster, using the words on the poster and flash cards. One or two new words are added each day.

The next unit may be on things that "Go." With a class of boys this type of unit is very good. In this unit all the words in the Family Unit are used. Literally, the Family is put on wheels, planes, boats, buses, etc.

When spring comes and the children are interested in getting outside, many trips are taken — trips to the farm fields, the greenhouse, the poultry coops, the dairy; also, to the barns where the baby pigs and little calves are housed. In connection with these activities a unit on "Things that Grow" may be planned. Seeds are planted and watched while they germinate and come to life. After our trips the children make up their own stories. These are printed on the board and used as reading lessons. Later, the children copy the stories on wide-ruled primary paper.

After going through several units, the children have a working vocabulary of one hundred or more words. By using a combination of methods — some old and some new — the individual child is helped with the method that works best for him.

The children are started with the sounds of some of the letters, such as M--m, the candy is good. The same procedure is used with other letters like f, t, v, d, j, l, s, z, h, and n. Too much stress on the sounds of letters is not good, but with this simplified method the retarded children learn most of the letters of the alphabet without direct teaching.

The practice of teaching formal phonics should be delayed until the child has developed an interest in reading. The child must have a large enough sight vocabulary so that familiar words can be used as stepping stones in developing the unfamiliar sounds of letters and words.

Teaching reading readiness and beginning reading in a school for retarded children requires not only skill and patience, but an abundance of love and kindliness for these "God's Most Innocent Children."

Flowers provide Easter setting for program rehearsals.

## TRAINING SCHOOL RECEIVES GRANTS TO AID IN RESEARCH

The National Science Foundation at Washington, D. C., has approved a grant of $11,900 for a two-year period to Dr. Johs. Clausen of The Training School research staff. The grant is in support of research of psychophysical problems in electrically induced visual sensations (phosphenes).

A third-year continuation of a grant from the U. S. Public Health Service at Washington, D. C., totaling more than $27,000, to Dr. George Satter — also a member of The Training School research staff — is in support of a development study of the growth patterns of intellectual functioning in retarded and normal subjects. The study includes a comparison of familial, organic, and unexplained cases, using a battery of standard psychometrics and techniques designed specifically for this project.

A gift of $10,000 recently received from Mr. and Mrs. Schuyler C. Wells for the establishment of an experimental psychophysical laboratory makes it possible to continue the line of investigation into basic sensory and motor processes by providing for the purchase of electronic apparatus used in such studies today.

The Ray and Charles Newman Memorial Foundation, Inc., of New York has provided funds for the second Workshop to assist community parents' groups with their work in behalf of mentally retarded children. The first Workshop held at The Training School in March, 1955 — a pilot study to determine the advisability and effectiveness of a new program of training resource parents — also was made possible through a similar grant from the Foundation.

The Research Laboratory of The Training School at Vineland, N. J., founded in 1906, this year celebrates its golden anniversary. Since its inception it has pioneered in research into the causes, treatment, and prevention of mental deficiency. Its findings and the practices of The Training School have influenced other workers in at least 29 countries who receive The Training School Bulletin. Although from the beginning basic research has been carried on, the Laboratory is probably best known for the "Kallikak" study, the Porteus Mazes, and the Vineland Social Maturity Scale.

## SUMMER PROGRAM AT THE TRAINING SCHOOL JUNE 25 TO AUGUST 31

A special ten-week summer program, "Adventure in Happiness," featuring expanded recreation and camp activities as well as remedial academic work and speech therapy for boys and girls of all ages, will open at The Training School on June 25. Dr. Walter Jacob, director of the school, stated that a number of additional children, not regularly registered at Vineland, are being enrolled by their parents for this summer session.

The program is organized by Superintendent Daniel F. Graham, with the assistance of Clifford P. Lockyer and others of the staff.

Mrs. Elizabeth McCarthy will be coordinator of the summer program activities. She will be supported in this work by many other staff members and by additional instructors to be engaged for the summer.

Play activities and group therapy will include swimming, fishing, sightseeing trips, picnics, camp-outs, gardening, nature-study, music, story-telling, folk dancing, pet shows, doll shows, school circus, movies, and a varied program of games and contests.

Children are trained for aquatic achievements at summer camp.

## TWO INSTITUTES TO ASSIST TEACHERS PLANNED FOR JUNE 18-29 AND JULY 2-14

The opening of two institutes for teachers of "Trainable" and "Educable" children at The Training School, Vineland, N. J., was announced by Dr. Walter Jacob, director of the school. The first institute will be held from June 18 through June 29 and the second from July 2 through July 14.

Dr. Harold A. Delp, coordinator of educational activities, will direct the institute sessions. Dr. Jacob will participate. Others assisting will be Dr. Mortimer Garrison, Jr., Dr. Alfred J. Butler, Dr. Joseph C. Kradel, Dr. Bernard B. Schlanger, Clifford P. Lockyer, and others from the school's education and psychology staffs. Arrangements are being made for the participation of visiting educators and psychologists.

Lectures, seminars, workshops, and discussion periods will be used to give personalized guidance to the teachers. Special classes will be continued during the institutes to give opportunity to teachers for direct observation of procedures and techniques. Teachers with emphasis on "Trainable" and "Educable" levels will have separate periods to discuss problems pertinent to each group. The research library will be available to all, and tours will be given for observation of school classes, home life in the cottages, the farm colony, vocational training activities, and clinical programs.

In last summer's institutes, teachers from as far as Arizona and Canada participated.

Enrollment is limited and will be accepted on a "first come, first served" basis. Applications, accompanied by a registration fee of $5.00, should be filed before May 15 for the first institute and June 10 for the second institute. Final registration on arrival of applicants. For information and applications Dr. Harold A. Delp, coordinator of educational activities, The Training School, Vineland, N. J., is to be contacted.

## RESOURCE-PARENT WORKSHOP SLATED AT TRAINING SCHOOL

Representatives of community groups, working in behalf of retarded children, will gather for a "Resource-Parent Workshop" at The Training School, to be held from June 18 through June 22.

Dr. Walter Jacob, director of the school, announced that due to the success of last year's pilot workship, funds have again been provided by the Ray and Charles Newman Memorial Foundation, Inc., New York, for a continuation of the project this summer.

The workshop will be directed by Dr. Harold A. Delp, coordinator of educational activities. He will be assisted by members of the education, psychology, cottage life, vocational training, and other departments of the school. As last year, a number of guest instructors will participate; among them Dr. Samuel R. Laycock, formerly of the University of Saskatchewan, Canada, and at present connected with the Canadian Mental Health Association; Dr. Herman D. Arbitman, executive director, Cleveland (O.) Council for the Retarded Child, and a former member of the research staff at The Training School; Miss Vincentz Cianci, supervisor of Home Training, New Jersey State Department of Institutions and Agencies.

The purpose of the workshop is to train one person from each community group as a consultant or "resource" person to help others in their home communities. Training a sizable group, comprised of parents from various communities, had been tried out by The Training School for the first time last year so that procedures and effectiveness could be tested for wider use.

Many of the participants in last year's workshop were representatives of local chapters of the National Association for Retarded Children.

Groups interested in having a representative participate should contact Dr. Harold A. Delp, The Training School, Vineland, N. J.

## SUPT. DANIEL F. GRAHAM LEAVES TRAINING SCHOOL

Daniel F. Graham, superintendent of The Training School since 1951, will leave May 1 to become executive director of the Magnolia School for Exceptional Children in New Orleans, La., Dr Walter Jacob, director of The Training School, announced recently. The Board of Trustees of the Magnolia School have called Mr. Graham to expand its program and facilities.

Mr. Graham was graduated from Susquehanna University, Selingsgrove, Penna., in 1931, studied physical education at Springfield College, Springfield, Mass., and received his Master's Degree in educational administration from the University of Pittsburgh in 1945.

For 17 years, he was teacher and administrator in Western Pennsylvania. Before coming to The Training School he was Superintendent of Schools at Somers Point, N. J.

In Vineland, Mr. Graham served as president of the Kiwanis Club. He is a member of the Methodist Church, the Cumberland County Board of the Tuberculosis and Health Association, and the Inter-Service Club Council.

Mrs. Graham is a teacher at Dorothy, N. J. They have three daughters. The family will reside for several months in Ocean City before following Mr. Graham to New Orleans.

Clifford P. Lockyer, supervisor of cottage life for the past two years, has been named by the Board of Trustees of The Training School to succeed Mr. Graham as superintendent.

The outstanding work Dan Graham has done here will leave a lasting imprint on The Training School. All his friends at the school regret his leaving, but are happy that he has had the opportunity to improve his position. They wish him well for the future.